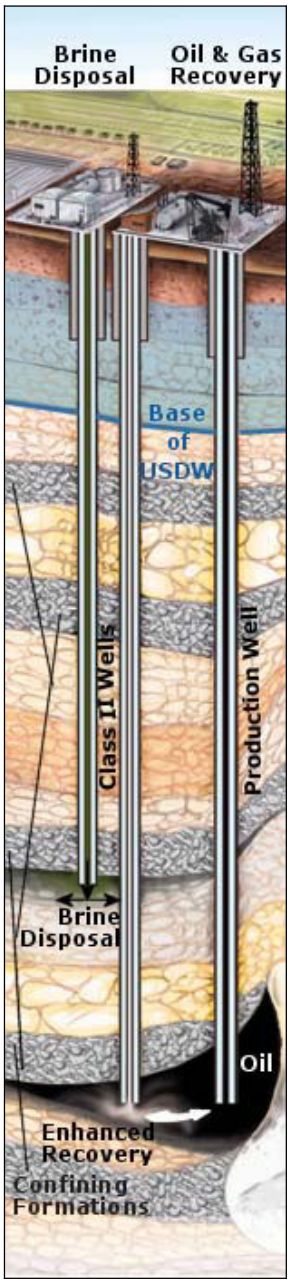
Ground Water Protection Council

Using RBDMS to Monitor CO2 Geosequestration Wells



Brine aquifers, oil and gas fields, and coal beds offer significant large-scale opportunities for storing CO2. RBDMS is an indispensable aid in managing data associated with each of these areas of regulatory interest.

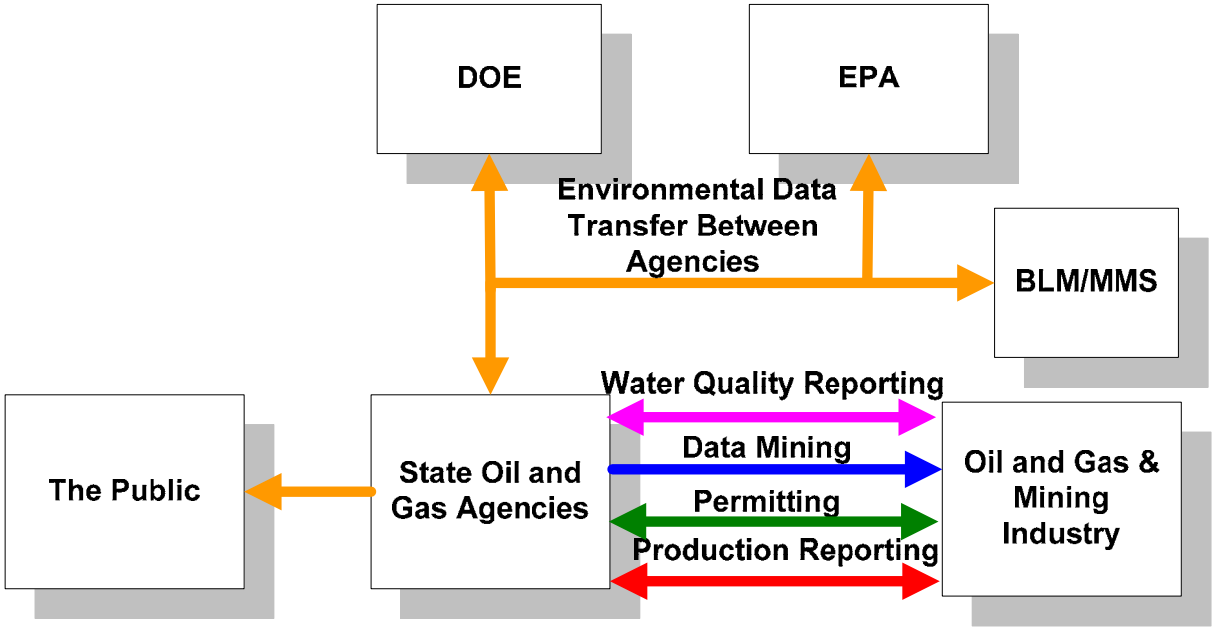
The Risk Based Data Management System (RBDMS) tracks the performance of oil, gas, saltwater disposal, coal bed methane, and CO2 flood wells and coal mines nationwide to protect ground water. RBDMS is a client/server information management system that pairs a SQL Server database with either an ASP.NET or a Windows smart client front-end application.

Through the analytical tools offered by RBDMS, 22 agencies across the nation balance the needs of energy production, underground injection, and environmental compliance. Agencies use RBDMS to handle the following tasks:

- Manage operator and bonding information.
- Track well locations through API well numbers, GPS coordinates, and GIS thematic maps.
- Assess area of review impacts (transport modeling) to protect underground sources of drinking water (USDWs).
- Track production, enhanced recovery operations, and brine disposal activities (volumes and pressures).
- Administer permits and related fee programs.
- Manage geological information such as formations, confining intervals, and interactions.
- Record well history from spudding to plugging.
- Track multilateral and directional well construction details and generate scaled drawings.
- Facilitate electronic permitting, reporting, and data mining through Web interfaces.
- Track mechanical integrity testing, inspection, compliance, and enforcement programs and complaint and spill investigations.
- Store photographs associated with the field inspection program.
- Inventory surface facilities.
- Schedule hearings.
- Access external databases such as document imaging systems.

The full-featured reporting module delivers regulatory and analytical data in tabular, statistical, EPA, letter template, and user-defined formats.

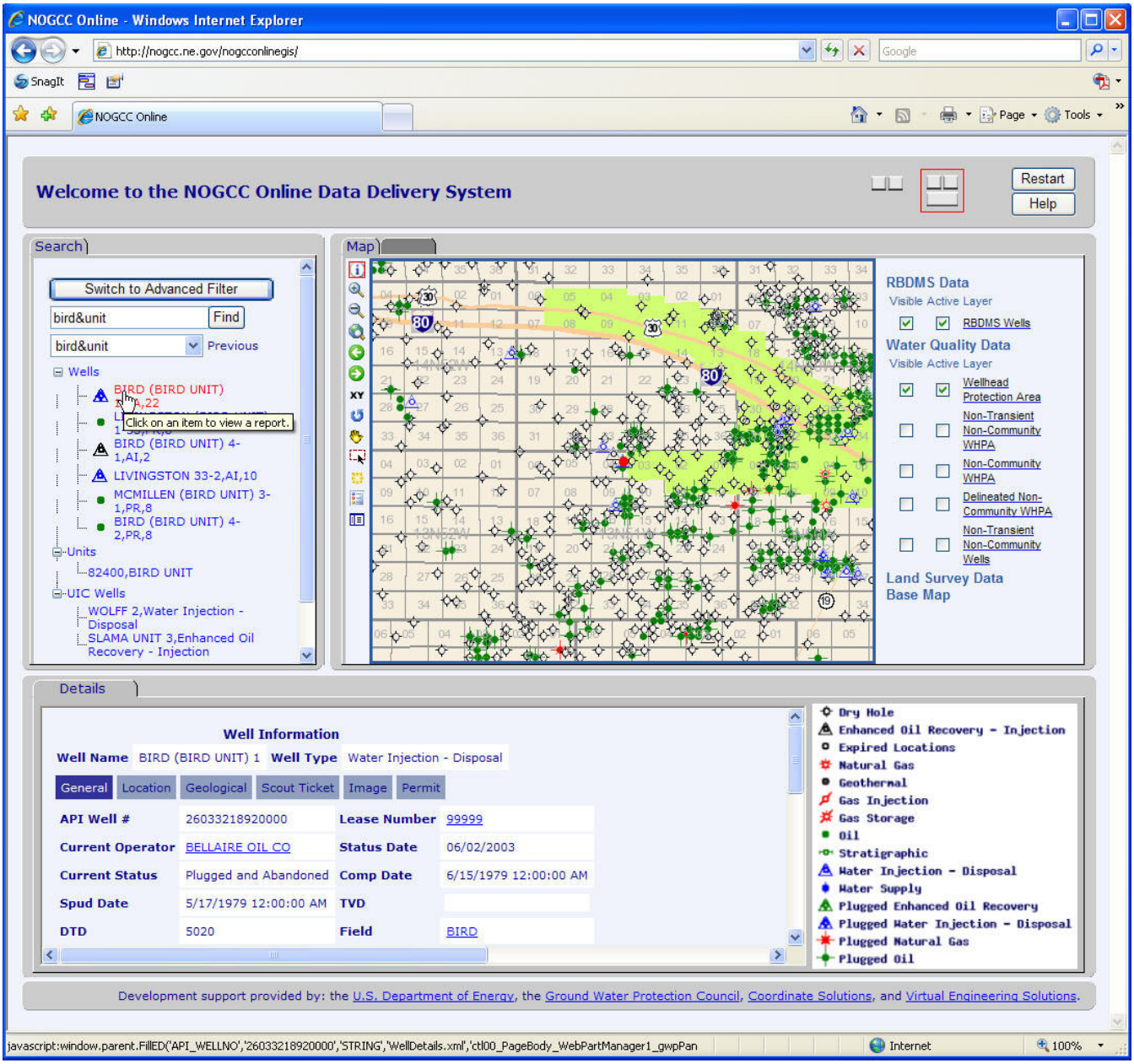
By warehousing the data necessary to make informed decisions about environmental protection and ground water resource management, RBDMS reduces the cost of information exchange between agencies and industry operators. These same features make RBDMS valuable in permitting and tracking the performance of CO2 geosequestration wells and monitoring other environmental media (e.g., soil, air, etc.).



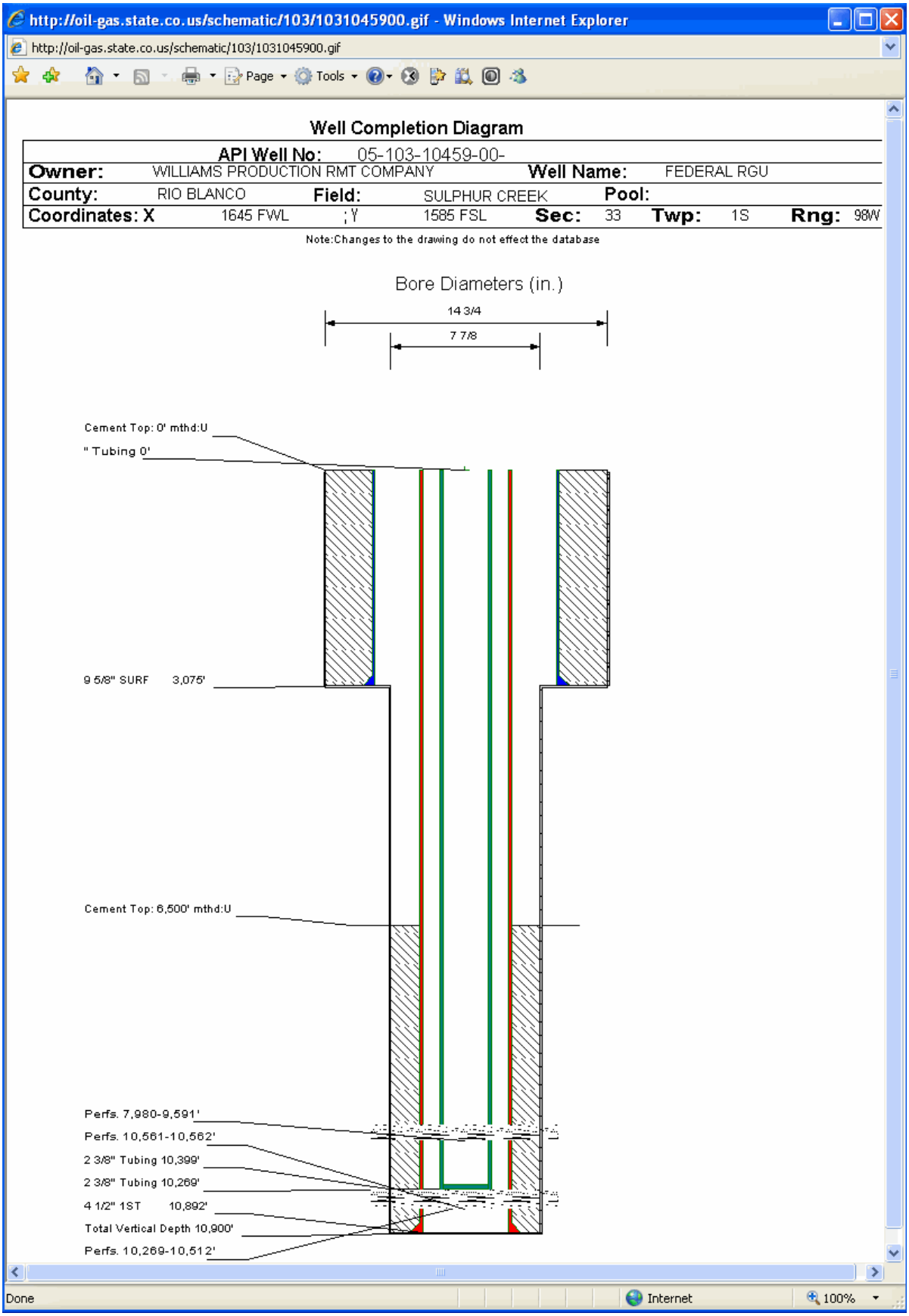
The GWPC also provides technology transfer opportunities between industry and state regulators and an educational outreach program for the public through the RBDMS initiative.

The GWPC invites regulatory agencies and other interested parties to become partners in this effort.

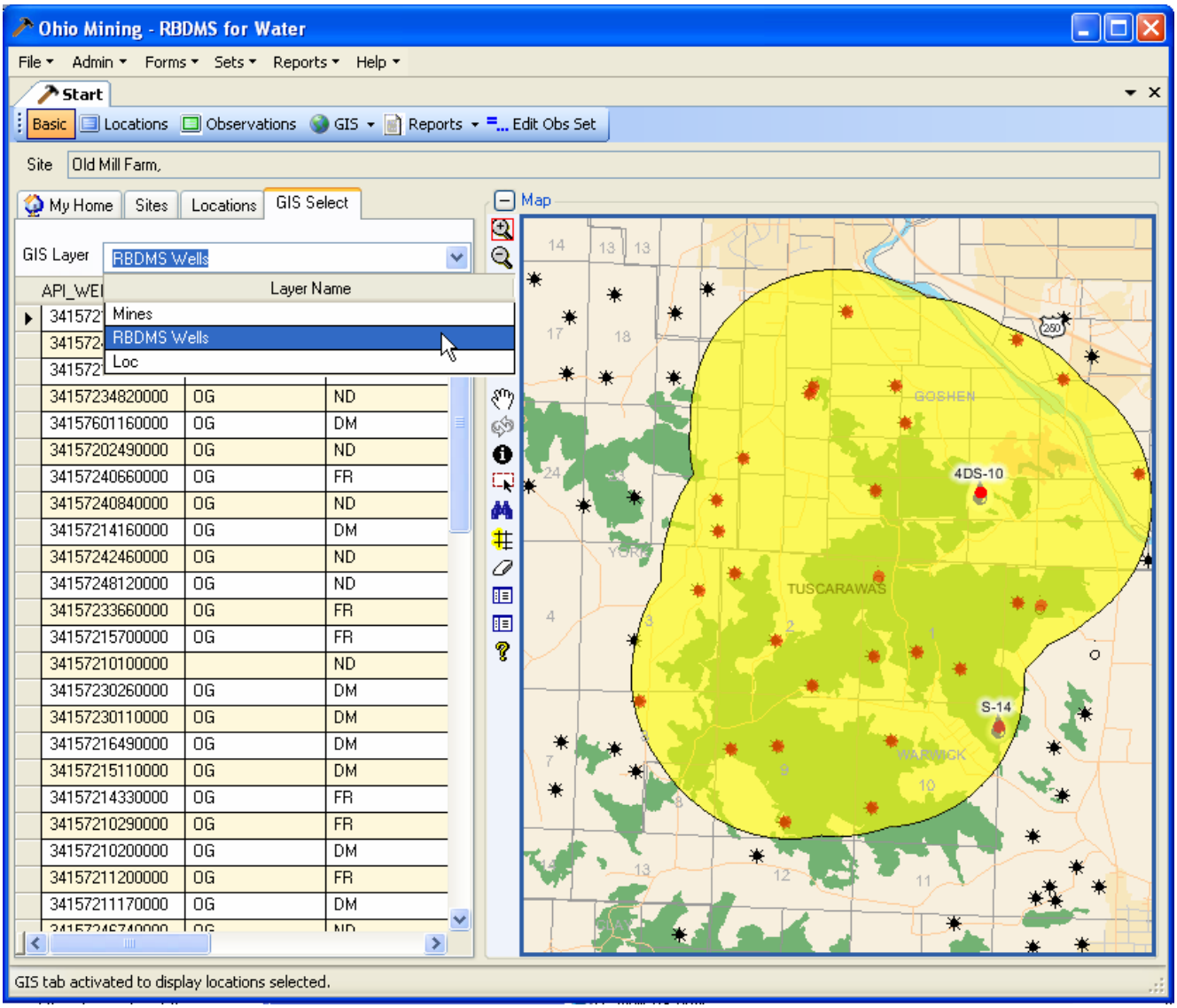
A few examples of RBDMS in action are presented here. Much more information is available from the GWPC (http://www.gwpc.org).



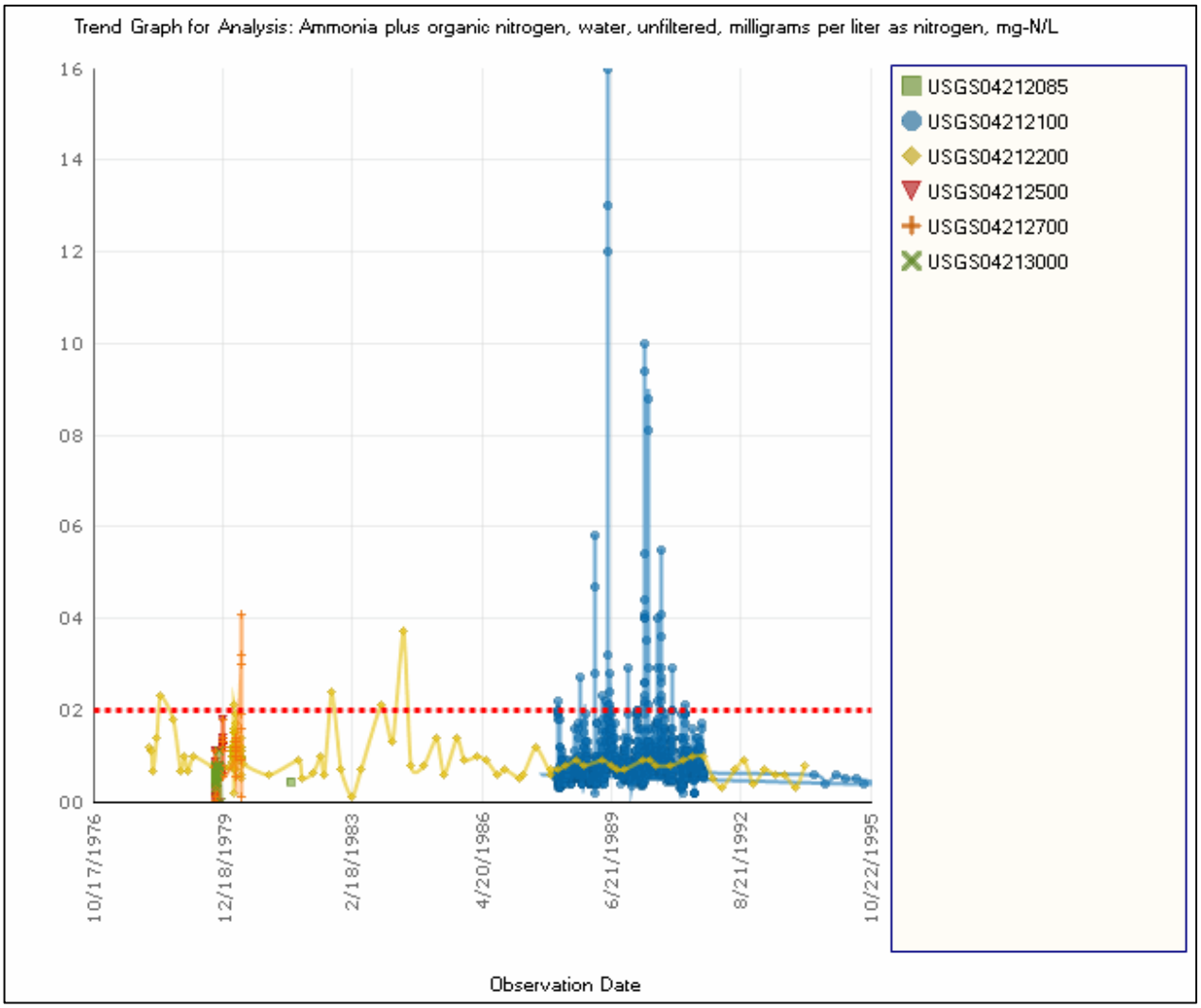
The Nebraska Oil and Gas Conservation Commission has determined that the cost to customize and deploy the RBDMS Data Mining application will be recouped within the one year of deployment as a result of field inspection program efficiencies the application has made possible.



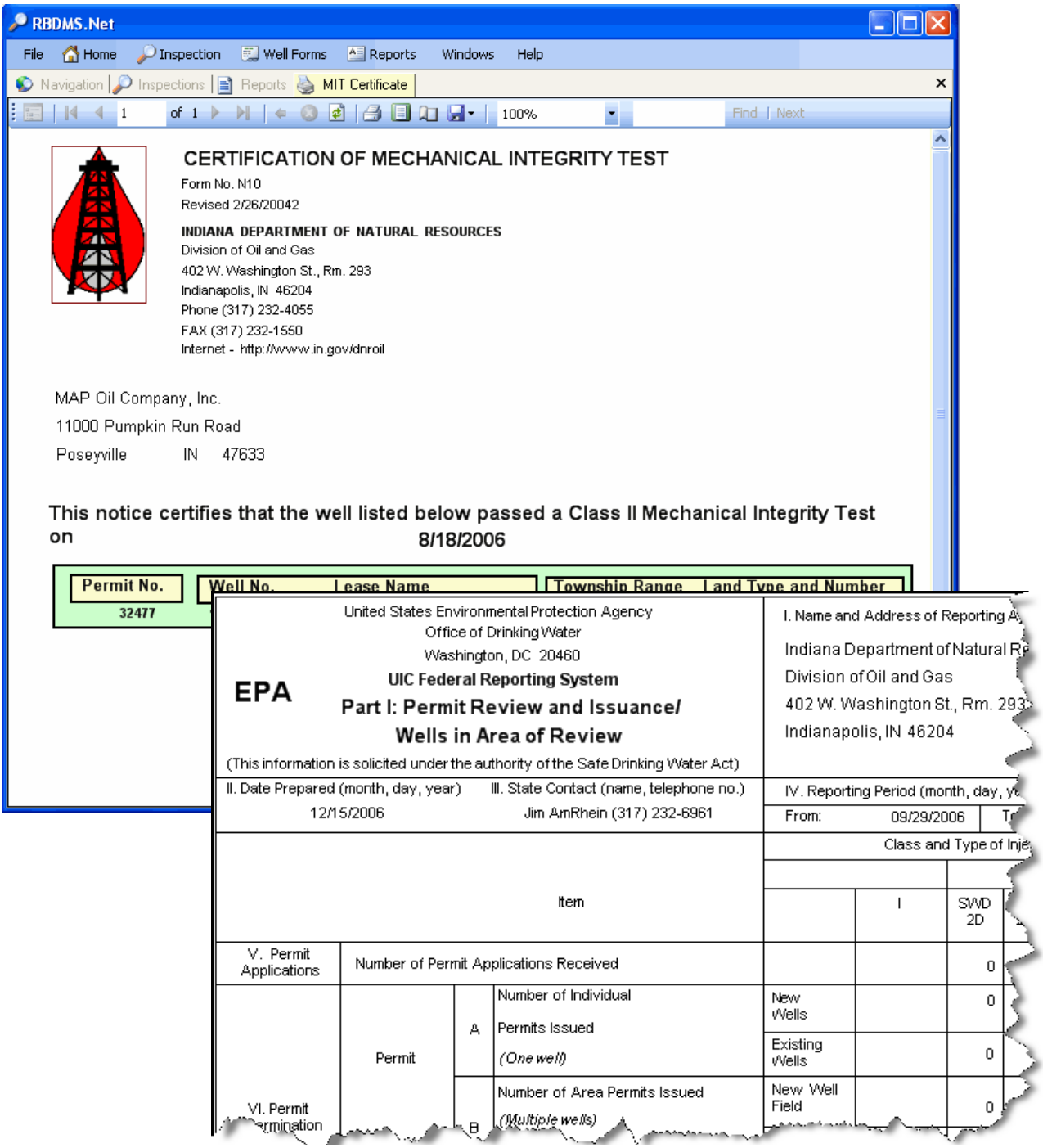
As deployed at the Colorado Oil and Gas Conservation Commission and the Osage Nation Environmental and Natural Resources (ENR) Department, the RBDMS Well Schematic Utility generates updated drawings of well construction details nightly for publication through a SQL Server stored procedure.



The RBDMS for Water Windows smart client .NET application in use for mining oversight at the Ohio Department of Natural Resources includes a GIS interface and a laboratory information management component to track surface and ground water impacts. A similar user interface also is used for oil and gas well tracking at the Indiana Division of Oil and Gas and the Osage Nation ENR Department.



The RBDMS Reporting module includes a full statistical package (box and trend graphs, box-whisker, criteria exceedance, and analytical results)…



…and an array of finished output options.

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